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Elbow Dysplasia: Clinical Signs Versus Radiographic Evidence

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Elbow dysplasia is considered a heritable disease process in several large breeds of dogs^{1,2}. It is a condition that should be included with hip dysplasia that should be screened for in youngsters 6 – 12 months of age. Since the heritability of elbow dysplasia is considered quite high, screening and selection would be extremely valuable to breeders. In addition, there are more options for surgery in both elbow and hip dysplasia and the surgical procedures have a far greater likelihood for success if done **early**, before any significant degenerative joint disease (DJD) has developed. In a [previous report](#)³, I discussed proximal ulnar osteotomy/ostectomy as a treatment for ununited anconeal process, OCD, and fragmented medial coronoid process, but cautioned that success was dependent upon being able to do the procedures **before** significant DJD occurred.

Interestingly, elbow dysplasia, unlike hip dysplasia, has not received the attention it deserves from veterinarians in their puppy orthopedic screening programs. Part of the reason

may be that elbow dysplasia may not always present with severe clinical signs, or may be “masked” by lameness from other conditions, such as hip dysplasia. Guthrie⁴ described elbow dysplasia as a disease pyramid, with subclinical cases making up the majority of the pyramid and clinical cases being only the ‘tip of the iceberg’. Subclinical cases present a clear danger from a breeder’s standpoint, and they are a concern from a pet owner’s point of view because subclinical cases may eventually become clinical cases.

One study by Read, *et al*⁵ reported on evaluation of 55 Rottweiler pups from 3 to 12 months of age. The pups were examined at ages 3, 5, 6, 9, and 12 months and their elbows were radiographed at 6 and 12 months of age. Their findings were that only 3 dogs were determined to be lame due to elbow dysplasia, but 57% of the dogs developed radiographic signs of elbow dysplasia by 12 months of age. Clinical signs of lameness

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due to elbow dysplasia will likely be associated with a grade II radiographic score.

The [International Elbow Working Group](#) (IEWG) has developed radiographic screening guidelines. They recommend radiographing both elbows utilizing a standard tabletop technique without a grid. They require at least one projection be taken with the humerus and radius at 45 degrees to each other to adequately delineate the dorsal aspect of the anconeal process, a common site for secondary osteophyte formation.

In addition, an extended lateral projection is recommended to more clearly show the radial head. Either a craniocaudal or caudocranial projection should also be evaluated. Dysplastic elbows are graded as **Grade I**, minimal arthrosis, **Grade II**, moderate arthrosis, and **Grade III**, severe arthrosis. Grade I classification includes sclerosis in the area caudal to

the distal end of the ulnar trochlear notch and osteophytes less than 2 mm high at one or more of these sites: dorsal edge of the anconeal process, dorsal proximal edge of the radius, dorsal edge of the medial coronoid process, lateral palmar part of the humeral trochlea. Grade II classification involves osteophytes 2-5 mm high at any of the locations listed in Grade I. Grade III classification involves osteophytes >5 mm high at any of the locations listed in Grade I.

Grading elbows that are dysplastic may be helpful to breeders because it has been shown that breeding parents with higher grades of elbow dysplasia result in a higher incidence of dysplasia in the progeny. By only breeding normal or Grade I parents, significant progress in Scandinavia and the UK has been made in reducing the incidence of elbow dysplasia in Rottweilers and Bernese Mountain Dogs⁴.

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